Class Times: Refer to Schedule

Location: EHS, Material Management Building

Prerequisites: None

Course Director: Dr. Anne-Sophie Brocard, Ph.D., RBP
anbrocar@utmb.edu
409-772-8472

Course Coordinator: Sharon Walters
skwalter@utmb.edu
409-772-8461

Course Description: This course will offer students an in-depth understanding of biosafety principles, practices and techniques that are necessary to successfully conduct research in an BSL3 laboratory. Topics will include: Assessment, Personal Protective Equipment (PPE), Proper Use and Selection of Biological Safety Cabinets (BSCs) and Chemical Fume Hoods (CFHs), Aerosol Producing Procedures, Biological and Chemical Exposures, Transport of Biological Materials, Disinfection, Waste Handling, and Emergency Laboratory Procedures. Emphasis will be on development of competencies in fundamental laboratory techniques and using risk assessments to work safely and aseptically in the laboratory. This class will prepare students for future advancement opportunities into BSL4 laboratories.

Course Objective: The principal objective of this course is to perfect students’ techniques with practices and techniques for BSL3 laboratory work. At the completion of this course, students will be able to evaluate laboratory standard operating procedures (SOPs) by risk assessment, demonstrate mastery of appropriate associated safety techniques, and employ, with proficiency, aseptic technique and safe use of PPE and BSCs.

Registration Form: Complete the BSL3 registration form (http://www.utmb.edu/BOF/BC/forms.asp) and return to the Course Coordinator.
Text & Materials: Biosafety in Microbiological and Biomedical Laboratories (BMBL, available online), Laboratory Biosafety Training Program Textbook, internal to EHS at UTMB (provided to students), and supplemental readings.

Grading: The course is graded Satisfactory/Unsatisfactory. Attendance and participation are required. Students must pass both components of the course to receive a passing (S) grade. Opportunities for remediation of laboratory skill proficiencies will be available to those who need them.

Course Outline:

Theoretical Course 8Hrs

Unit 1: Biological Agents and Risk Assessment
Objectives-Learners will:
• recognize factors associated with assessing risk
• describe risk associated with agents to be handled

Unit 2: Principles of Biosafety Cabinets (BSCs) and Chemical Fume Hoods (CFHs)
Objectives-Learners will:
• identify different types of BSCs
• differentiate between BSCs, CFHS, and clean benches
• recognize techniques for proper use of the BSC for certain applications
• compare airflow patterns of BSCs, CFHs, and clean benches
• evaluate risks associated with improper use of BSCs, CFHs, and clean benches with agents of varying risk factors
• name the 3 types of protection offered by a BSC
• name the 3 types of instances that require BSC certification

Unit 3: Principles of Disinfection
Objectives-Learners will:
• demonstrate knowledge of appropriate techniques for proper disinfection of BSCs, centrifuges, and incubators

Unit 4: Waste Handling and Disposal Procedures
Objectives-Learners will:
• recognize how to properly dispose of biological waste in the laboratory

Unit 5: Risks Involved with Aerosol Producing Procedures
Objectives-Learners will:
• recognize factors associated with aerosol production
• describe common procedures that produce aerosols in the laboratory
• recognize laboratory equipment that might produce aerosols
• evaluate the risks associated with working with infectious materials and laboratory equipment that potentially produce aerosols
• create SOPs that include safety practices for laboratory equipment that may produce aerosols using a risk assessment

Unit 6: Risks Associated with Biological/Chemical Exposures
Objectives- Learners will:
• identify potential biological/chemical exposures
• explain how to respond and report a biological/chemical exposure
• judge risk of biological/chemical exposure given theoretical scenarios using risk assessment techniques learned in Unit 1

Unit 7: Transportation of Biological Materials (infectious & non-infectious)
Objectives- Learners will:
• identify agencies that regulate transport of biological materials
• compare procedures for transporting biological materials in the lab vs. across campus vs. off campus

Unit 8: Emergency Procedures
Objectives- Learners will:
• evaluate response to spills in different locations in the laboratory
• recognize emergency response procedures specific to UTMB for laboratories

Unit 9: Principles of Personal Protective Equipment (PPE)
Objectives- Learners will:
• compare advantages and disadvantages of types of PPE
• explain the use of PPE for certain applications based on risk assessment
• correctly don and doff PPE

Unit 10: Principles of Biosafety Containment
Objectives- Learners will:
• categorize BSL 1-4 labs based on primary and secondary barriers
• use risk assessment to categorize agents based on risk factors according to BMB guidelines for Biosafety Levels

Unit 11: Regulatory Requirements
Objectives- Learners will:
• identify the type of notification that is needed based on the research conducted
• identify agencies with oversight and/or the regulatory involvement in the research
• understand the report system and its importance
Practical training (6hrs)

Unit 1: Proper techniques in a BSC  
Unit 2: Organization in the BSC  
Unit 3: Decontamination, Emergency Responses

Discussion 1Hr

Discussion of a laboratory acquired infection or incident

**ASSIGNMENTS Pre- and Post-Course**

**LABORATORY PRACTICAL**

2 hour sessions; times assigned by instructor

**FINAL EXAM**

6-Hour Exam